# ICD2 - HLS Central West ICD10 Bot



# Overview

# Components

## ICD2DB

This is a [Microsoft SQL Server](https://azure.microsoft.com/en-us/services/sql-database/) database with a single table (ICD10Codes). Each row in the table contains an ICD10 code, and its associated text description. A [full-text index](https://docs.microsoft.com/en-us/sql/relational-databases/search/full-text-search?view=sql-server-2017) on the table allows for ICD10 codes to be looked up using natural text search.

## ICD2-BOT

A bot built using the [Microsoft Bot Framework](https://dev.botframework.com/), [NodeJS](https://nodejs.org/en/), and [TypeScript](https://www.typescriptlang.org/) that handles user input for searching ICD10 codes.

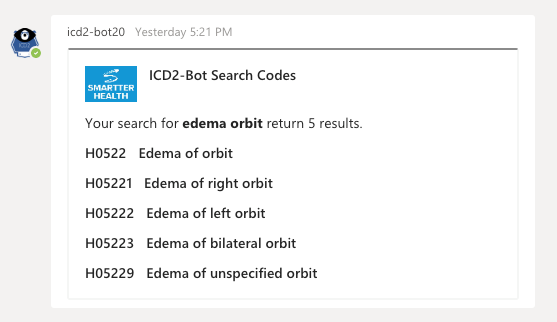


Figure 1: ICD2-Bot in Action

# Deployment

## Tools Needed

* An [Azure](https://azure.microsoft.com/en-us/) Subscription that will host the ICD2 components.
* [SQL Server Management Studio](https://docs.microsoft.com/en-us/sql/ssms/download-sql-server-management-studio-ssms?view=sql-server-2017) for deploying the ICDDB database to Azure.
* (Optional) [Visual Studio Code](https://code.visualstudio.com/) for local development.
* (Optional) [NGrok](https://ngrok.com/) for local development and debugging.

## Step 1: Deploy the ICD2DB Database to Azure

### Installation

While you can use the database scripts located in the *db* folder to create the database manually, the **easiest** way to get the database up and running is to perform the following:

1. Download *\*ICD2DB.bacpac\** to your local machine from [here](https://github.com/SmartterHealth/icd2-bot/blob/master/db/ICD2DB.bacpac).
2. Upload the *\*ICD2DB.bacpac\** file to [Azure Blob Storage](https://docs.microsoft.com/en-us/azure/machine-learning/team-data-science-process/move-data-to-azure-blob-using-azure-storage-explorer).
3. Import the *\*ICD2DB.bacpac\** blob into [Azure SQL Server](https://docs.microsoft.com/en-us/azure/sql-database/sql-database-import#import-from-a-bacpac-file-using-azure-portal).
4. **Recommended:** Using [SQL Server Management Studio](https://docs.microsoft.com/en-us/sql/ssms/download-sql-server-management-studio-ssms?view=sql-server-2017), create a [SQL Login][sqllogin] and add to the *\*dbdatareader\** role for the database. Use this login when connecting to the database from the ICD2 bot. **\*\*Do not\*\*** use the admin password.

You will need your database name, login, and password for the next steps.

### Did it Work?

You can test the installation of the database by executing the following stored procedure from [[SQL Server Management Studio](https://docs.microsoft.com/en-us/sql/ssms/download-sql-server-management-studio-ssms?view=sql-server-2017):

EXEC    [dbo].[SEARCH\_CODES] @keywords = N'edema orbit'

If you get errors running the stored procedure, check the following:

\* Ensure that the **SEARCH\_CODES** stored procedure has been created.

\* Ensure the current user has execute permissions to the **SEARCH\_CODES** stored procedure. The user only needs *read* permissions for the **ICD10Codes** table.

\* Ensure that the **ICD10Codes** table has a *FULL TEXT INDEX* on all columns.

## Step 2: Deploy the ICD2 Bot to Azure

### Create the Azure Web App Bot

Clone or [download the \*.zip](https://github.com/SmartterHealth/icd2-bot/blob/master/deployment/icd2-bot.zip) for the bot source code. If choosing the \*.zip download, extract the contents to a working directory.

1. First, Create a web app bot in Azure using the instructions located [here](https://docs.microsoft.com/en-us/azure/bot-service/bot-service-quickstart?view=azure-bot-service-4.0).
   * Select a good bot name that is meaningful to you.
   * Make sure you specify a location near you.
   * Under **Bot Template**, ensure that **SDK Version** is set to *SDK v.4* and **SDK Language** is set to *Node JS*. Choose *Echo Bot*, as we will deploy over this in later steps.
   * Remember the name of the bot you specified, as well as the resource group you selected. You will need them later during deployment.

az bot publish --name "your-bot-name" --resource-group "your-resource-group" --code-dir <path to directory>